

M. elengi Linn. var. *typica* (*elengi*), var. *parvifolia* (R. Br.) Lam, var. *brevifolia* Lam and *M. elengi* Linn. var. *typica* (*elengi*), forma *longepedunculata* (Blume in Burck) Lam in Bull. Jard. Bot. Bzg, sér. 3, 7:235-238, 1925.

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34. NOCTURNAL POLLINATION IN *ANTIRRHINUM MAJUS* LINNAEUS BY *XYLOCOPA RUFESCENS* FABRICIUS

INTRODUCTION

In many regions of the World there exist a class of plants which blossom at night. This 'Nocturnal pollination system' has evolved in different plants of unrelated as well as related families. The study of the evolutionary aspect of night pollination has received very little attention so far. One of the most interesting aspects of night pollination is the role played by insects and other pollinators and the way these have become adapted along with the evolution of the plants. In this communication, some observations on the pollinating mechanism of the Snap-dragon (*Antirrhinum majus* L.) is presented.

The plants are cultivated at a height of 4400 ft (c. 1340 m) in the Biligirirangan Hills, near buildings. It was possible to study the pollinator and its plant for several hours at night. Such careful and prolonged observations have excluded all other possible methods of pollination.

DESCRIPTION

The plant, commonly called 'snout flower' or 'snap dragon' (anti = like, rhin = snout) belongs to the family Scrophulariaceae. It is usually cultivated in gardens. The flowers are mildly fragrant and have an uncommon structure. They are borne on long spikes. The corolla tube is rather large and saccate at the base. There are two prominent and curiously shaped lips. On pressing these lips gently between the thumb and the forefinger, they open wide apart due to an intricate mechanism and reveal the variegated throat. The upper lip is erect and the lower lip spreading. The middle lobe is smaller than the side lobes with a large bearded palate. The flowers are of various shades of pink, rose, apricot, orange, crimson, carmine, yellow, white and many gradients of

colours varying from white to shades of light pink salmon, pale maroon and many other attractive combinations of hues in one flower, have been evolved due to intensive floriculture.

Its pollinator, *Xylocopa rufescens* Fabr. (commonly called the 'carpenter bee'; *Xylocopa* = wood cutter) belongs to the family Xylocopidae of the order Hymenoptera. *Xylocopa* are the giants of the bee world and are solitary bees. They have a heavy and stout black coloured body without the pollen baskets on the hind legs. Mouth parts are of 'chewing and lapping' type. Tongue long and slender. These bees bore energetically into dead branches and trunks of trees, and enter buildings where they bore into posts and rafters. They are nuisance not only on account of the damage done to rafters and beams, but also on account of wood dust and other refuse dropped out. They are usually present in forest rest houses and wooden bungalows. This species is strictly a nocturnal Indian carpenter bee. Tunnels are more or less cylindrical, an inch to 1.5 inches in diameter, up to 8 inches long, with short side branches. In this, a series of cells are constructed and each cell contains an egg along with bee bread and pollen (Tsing-Chao Ma 1938; Beeson 1938).

POLLINATION MECHANISM

The female carpenter bee starts its activity at about 7 p.m. in the evening. The bee appears to locate *Antirrhinum* at night purely by sight alone. It was found to visit white flowers more frequently than variegated ones, as possibly the white flowers are more easily seen during night. The shape of the flower fits neatly to the landing posture of the insect body. The insect with a high humming noise alights on the lower lip which goes down due to the weight thus applied and the insect inserts its head into the saccate tube. *Xylocopa* being chiefly a pollen collecting bee, assumes a pendent position under the anthers and by vibrating its wings slightly shakes out of the anthers the dry pollen grain on to the back of its body. When the insect happens to visit another flower, the stigma of that flower comes in contact with the back of the bee and is thus pollinated.

DISCUSSION

'Failure' on the part of some species of flowering plants to compete with the innumerable day bloomers is believed to be the chief cause for the origin of nocturnal pollinating system in angiosperms. Presumably, the evolution of successful night bloomers should have been from

a stock of late day and dusk bloomers. From the latter would have evolved a line of night bloomers eventually through failure to withstand intense competition from the vast array of strictly day bloomers. A similar and a parallel changeover in the pollinating activity must have taken place among certain species of pollinators as is indicative in the *Antirrhinum-Xylocopa* type, where the co-adapted system is very clear. The nocturnal pollinating system in its infancy must have consisted of only a few species of night bloomers and their pollinators. But, now the pollinating system has reached a high density and has developed advanced stages of specialization.

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REFERENCES

- BEESON, C. F. C. (1938): Carpenter species of the genus *Xylocopa*. *Rec. Bees. Indian Forester* 64:735-737. *Indian Mus.* 40:265-329.
TSING-CHAO MA (1938): The Indian

35. NEOTYPE OF *FARSETIA MACRANTHA* BLATT. & HALLB. (CRUCIFERAE)

(With four text-figures)

Farsetia macrantha which Blatter & Hallberg (1918) described as a new species from the Indian Desert, has been put in the synonymy of *Farsetia jacquemontii* Hook. f. & Thoms. by Jafri (1957), although he, in his own words "could not examine any material of *F. macrantha* Blatt. & Hallb., but from the measurements given in the specific description (*F. macrantha*) it fits easily within the limits of the same group" (i.e., *F. jacquemontii* sub sp. *jacquemontii*). While a detailed study, whether *F. macrantha* is conspecific with *F. jacquemontii*, is under progress, a search has been made for the type of *Farsetia macrantha*.